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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,606	02/25/2005	Edgar Bolinth	112740-1058	7978

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EXAMINER	
HO, HUY C	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,606	BOLINTH ET AL.	
	Examiner	Art Unit	
	HUY C. HO	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's arguments filed 12/19/2008, with respect to claims 10, 17, 20 and new claims 21-29 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims 10-13, 15-23 and 25-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gudmundson et al. (5,790,516) Ramesh (6,463,105)** and further in view of **Heinonen et al. (US 6,700,866)**.

Consider claim 10, (Currently Amended) Gudmundson discloses a method for transmitting data in a multi-carrier system to which a frequency band is assigned, for which carrier frequencies are subdivided into at least one sub-carrier band dividing the frequency band (**see the abstract**), the method comprising:

monitoring a transmission characteristic;

performing, on a send side, and depending on the transmission ~~channel~~ characteristic, an adaptive pre-emphasis of a send signal for a part of the carrier frequencies of the at least one sub-carrier band (**see col 1 lines 9-13, col 3 lines 65-67, col 4 lines 1-5, col 4 lines 15-22,** describing pulse shaping function being multiplied with a **OFDM** data signal before transmission over a channel in a purpose of lessening the effect of Doppler effect and inter symbol interference), thereby reducing inter channel interference caused by at least two subscribers (**see col 4 lines 63-67, col 5 lines 1-67, col 6 lines 1-55**), ~~the part of~~ wherein the carrier frequencies which are subject to the adaptive pre-emphasis are only frequencies located at an edge of the at least one sub-carrier band ~~being a subset of at least one sub-carrier band wherein the subset includes sub-carrier bands of the at least two subscribers that are adjacent~~ (**col 4 lines 63-67, col 5 lines 1-67, col 6 lines 1-55),** and

providing that the adaptive pre-emphasis relates only to, the part of the carrier frequencies being a subset of the at least one sub-carrier band (**col 4 lines 63-67, col 5 lines 1-13, col 6 lines 1-55,** describing sub-carrier frequency adjustment).

Gudmundson does not specifically show monitoring a transmission characteristic, but it is noticeable Gudmundson teaches in a downlink transmission, a base station multiplexes all users on different sub-carriers, and each mobile station user can be assigned a set of sub-carriers used by the particular base station for performing the construction of OFDM signals **(see col 2 lines 50-67)**, thus this implies transmission channel being controlled by the base station. Ramesh teaches method and system for estimation of the carrier to interference ratio of a channel response to the channel characteristics over an estimation time period and teaches monitoring the downlink channel over a time period **(see the abstract, col 3 lines 20-67, col 4 lines 1-60, col 8 lines 59-67)**, thus Ramesh discloses monitoring a transmission characteristic.

Since both Gudmundson and Ramesh teach method and system for data transmission in OFDM systems, it would have been obvious to one skilled in the art to modify Gudmundson's teachings and combining Ramesh's teachings of monitoring transmission characteristics so as to improve method and system discussed by Gudmundson **(see col 1 lines 5-67, col 2 lines 1-67 and col 3 lines 1-62).**

Gudmundson, as modified by Ramesh, does not show adaptive pre-emphasis applied to frequencies located at an edge of one sub-carrier band. Heinonen teaches a multi-carrier system and discloses adjustment and correction are applied for frequencies located edge portions of a frequency band **(see Heinonen, col 6 lines 5-67),** therefore disclosing adaptive pre-emphasis applied to frequencies located at an edge of one sub-carrier band.

Gudmundson, Ramesh and Heinonen teach multi-carrier OFDM system and method, it therefore would have been obvious to one skilled in the art to modify teachings of Gudmundson, modified by Ramesh, and combining teachings of Heinonen of adjustment and correction for frequencies located edge portions of a frequency band in a multi-carrier system so as to improve the inter-channel interference for the performance of the system.

Consider claim 20, (Currently Amended) Gudmundson discloses a transmit device for transmitting data in a multi-carrier system to which a frequency band is assigned, of which carrier

frequencies are subdivided into at least one sub-carrier band subdividing the frequency band (see the abstract), comprising:

parts for monitoring a transmission characteristic; and

parts for pre-emphasis of a certain part of the carrier frequencies of the at least one sub-carrier frequency of a send signal, which is adaptively performed depending on the transmission ~~channel~~ characteristic such that the pre-emphasis relates only to the certain part of the carrier frequencies of the at least one sub-carrier band (see the abstract, col 3 lines 20-30, 44-67, col 4 lines 30-40, col 6 lines 1-25, describing estimation of a carrier, communication channel interference, channel response characteristics over a time period, and sub-carrier frequency adjustment), thereby reducing inter channel interference caused by at least two subscribers (see col 4 lines 63-67, col 5 lines 1-67, col 6 lines 1-55), ~~the certain part of~~ wherein the carrier frequencies which are subject to the adaptive pre-emphasis are only frequencies located at an edge of the at least one sub-carrier band ~~being a subset of at least one sub-carrier band wherein the subset includes sub-carrier bands of the at least two subscribers that are adjacent~~ (col 4 lines 63-67, col 5 lines 1-67, col 6 lines 1-55);

Gudmundson does not specifically show monitoring a transmission characteristic, but it is noticeable Gudmundson teaches in a downlink transmission, a base station multiplexes all users on different sub-carriers, and each mobile station user can be assigned a set of sub-carriers used by the particular base station for performing the construction of OFDM signals (see col 2 lines 50-67), thus this implies transmission channel being controlled by the base station. Ramesh teaches method and system for estimation of the carrier to interference ratio of a channel response to the channel characteristics over an estimation time period and teaches monitoring the downlink channel over a time period (see the abstract, col 3 lines 20-67, col 4 lines 1-60, col 8 lines 59-67), thus Ramesh discloses monitoring a transmission characteristic.

Since both Gudmundson and Ramesh teach method and system for data transmission in OFDM systems, it would have been obvious to one skilled in the art to modify Gudmundson's teachings and combining Ramesh's teachings of monitoring transmission characteristics so as to improve method and system discussed by Gudmundson **(see col 1 lines 5-67, col 2 lines 1-67 and col 3 lines 1-62).**

Gudmundson, as modified by Ramesh, does not show adaptive pre-emphasis applied to frequencies located at an edge of one sub-carrier band. Heinonen teaches a multi-carrier system and discloses adjustment and correction are applied for frequencies located edge portions of a frequency band **(see Heinonen, col 6 lines 5-67),** therefore disclosing adaptive pre-emphasis applied to frequencies located at an edge of one sub-carrier band.

Gudmundson, Ramesh and Heinonen teach multi-carrier OFDM system and method, it therefore would have been obvious to one skilled in the art to modify teachings of Gudmundson, modified by Ramesh, and combining teachings of Heinonen of adjustment and correction for frequencies located edge portions of a frequency band in a multi-carrier system so as to improve the inter-channel interference for the performance of the system.

Consider claims 11 (previously presented), 21 (New), A method for transmitting data as claimed in claims 10, 20, Gudmundson, as modified by Ramesh, further discloses wherein the pre-emphasis is performed by at least one of a filtering and a windowing in at least one of a time and a frequency range **(col 7 lines 1-65, describing FFT circuit being used, pulse shaping multiplier, OFDM symbol time and frequency bandwidth).**

Consider claims 12 (previously presented), 2 (New), The method for transmitting data as claimed in claims 11, 21, Gudmundson, as modified by Ramesh, discloses wherein the filtering is performed by a signal filter which exhibits substantially high filter rates of change in the frequency range **(col 3 lines 25-40).**

Consider claims 13 (previously presented), **23** (New), A method for transmitting data as claimed in claims 11, 21, Gudmundson, as modified by Ramesh, discloses wherein a window function is used which is embodied such that the windowing is executed in the time range with an over sampling being used to achieve high-filtered rates of change in the frequency range **(col 3 lines 25-40, col 7 lines 5-21, col 8 lines 13-20)**.

Consider claims 15 (previously presented), **25** (New), A method for transmitting data as claimed in claims 10, 20, Gudmundson, as modified by Ramesh, further discloses wherein the multi-carrier system is used in combination with an FDMA method **(col 1 lines 15-35, col 2 lines 55-67)**.

Consider claims 16 (previously presented), **26** (New), A method for transmitting data as claimed in claims 15, 25, Gudmundson, as modified by Ramesh, further discloses wherein the FDMA method is an OFDMA method **(col 1 lines 15-35, col 2 lines 55-67)**.

Consider claims 17 (Currently Amended), **27** (New), A method for transmitting data as claimed in claims 10, 20, Gudmundson, as modified by Ramesh and Heinonen, discloses wherein the pre-emphasis is limited to a first and a last carrier frequency ~~in edge areas~~ of the at least one sub-carrier which is assigned to one user **(see Heinonen, col 6 lines 5-67, disclosing adjusting and correction applied to the upper and lower edge of the frequency band)**.

Consider claims 18 (previously presented), **28** (New), A method for transmitting data as claimed in claims 17, 27, Gudmundson, as modified by Ramesh, further discloses wherein the edge areas border on other sub-carrier bands **(col 3 lines 20-55, col 4 lines 5-15)**.

Consider claims 19 (previously presented), **29** (New), A method for transmitting data as claimed in claims 13, 23, Gudmundson, as modified by Ramesh, further discloses wherein a value of a first symbol duration assigned to one of the emphasized carrier frequencies remains the same **(col 5 lines 1-41, the duration is the same for pulse shaping carriers)**, and wherein, with regard to one of the time range windowing and the frequency range filtering, an overall length of a time range window

not exceeding an OFDM useful symbol duration as well as a duration of a cyclic prefix and a necessary rate of change of the sub-carriers is determined by the over sampling (col 3 lines 25-40, col 7 lines 5-36, col 8 lines 13-20, describing the FFT frame OFDM symbol time and are constant for a given frequency bandwidth, for a cyclic extension).

7. Claims 14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundson et al. (US 5,790,516), in view of Ramesh (US 6,463,105), Heinonen et al. (US 6,700,866) and further in view of Muri (US 4,513,385).

Consider claim 14 (previously presented), 24 (New), A method for transmitting data as claimed in claim 13, Gudmundson, as modified by Ramesh and Heinonen, further discloses wherein the window function (see Gudmundson, col 6 lines 14-25, col 8 lines 50-67). Gudmundson, as modified by Ramesh and Heinonen, does not show window function is one of a Blackman, Bartel, Kaiser, and Papoulis window function. Muri teaches a method and apparatus for digital sampled system, more specifically, Muri teaches mathematical algorithms for filtering predetermined frequencies using DSP digital filtering techniques, i.e., filtering windows as rectangular window, Barlett, Blackman and Kaiser windows (see col 1 lines 13-67, col 2 lines 1-29), thus Muri discloses predetermined frequencies samples transmission are filtered by usage of various types of digital filtering windows, e.g., rectangular window, Barlett, Blackman and Kaiser windows.

Since both Gudmundson, Ramesh, Heinonen and Muri teach a method and system for digital signal processing in communication system, it would have been obvious to one skilled in the art to modify the teachings of Gudmundson, as modified by Ramesh by combining teachings of Muri of using variety of digital filtering windows such as Blackman, Bartel and Kaiser, so as to improve the method and system taught by Gudmundson, as modified by Ramesh and Heinonen.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUY C. HO whose telephone number is (571)270-1108. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alex V. Eisen can be reached on 571-272-7687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Huy C Ho/
Examiner, Art Unit 2617

/Alexander Eisen/

Supervisory Patent Examiner, Art Unit 2617